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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/922,048	08/03/2001	James Marshall Oathout	SS-3060, US NA	7560

23906 7590 05/28/2004

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EXAMINER	
VANATTA, AMY B	

ART UNIT	PAPER NUMBER
3765	

DATE MAILED: 05/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/922,048	OATHOUT ET AL.	
	Examiner	Art Unit	
	Amy B. Vanatta	3765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 March 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) *14* is/are withdrawn from consideration.

5)☒ Claim(s) *13* is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 August 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *03122004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restriction

1. Claim 14 remains withdrawn from consideration as drawn to an invention which was non-elected with traverse in Paper No. 8.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Russian Patent No. 432934 in view of Canadian Pat. No. 739,652.

Russian Patent No. 432934 discloses a method for changing the orientation of fibers in a nonwoven web including steps of providing a plurality of fluid jets offset at an appreciable angle from the perpendicular with respect to the web (see Fig. 1). A plurality of fluid streams are applied from the jets onto a surface of the nonwoven web, with the streams forming a substantially coplanar curtain (3'). The streams have sufficient pressure to move the fibers into a different orientation (see Abstract, which discloses that the fibers are moved into parallelization by longitudinal forces of the jets, while transverse forces move the fibers apart).

Although the document does not disclose that the step of applying fluid streams onto the web is performed "to increase the isotropy of the nonwoven web", such a recitation amounts to the reason for performing the claimed step and does not positively recite any additional manipulative steps which define over the steps of the Russian document. The recitation that the step of applying fluid streams onto the web is performed "to increase the isotropy of the nonwoven web" merely amounts to the recitation of an intended characteristic of the resulting web and does not further define the actual manipulative steps of the claimed method. Moreover, the Russian document does disclose that the loosening of the fibers is increased and the permeation of the fiber layer by liquid is increased (see translation page 2, lines 3-4). Thus, it appears that the isotropy with regard to at least some physical characteristic(s) (such as loosening of the fibers or permeation) is inherently increased by the method of the document.

Russian Pat. No. 432934 does not disclose that the fibers are locked to maintain their different orientation, as recited in claim 1, however nonwoven fabrics are commonly treated after hydroentanglement or other hydrodynamic processes to lock the fibers in place. Canadian Pat. No. 739,652 teaches that it is conventional to bond the fibers or apply a binder to the fibers of the non-woven after treatment with fluid jets. On page 56, lines 29-30, the patent teaches that the product produced by the fluid jet treatment process may be bonded after treatment with the jets. Such bonding locks the fibers in place, as is well known in the art, and results in a strong more stable non-woven. It would have been obvious to one having ordinary skill in the art at the time the

invention was made lock the fibers of the non-woven of Russian Pat. No. 432934 in place by bonding, as taught by Canadian Pat. No. 739,652, in order to provide a stronger, more stable product.

Regarding claims 2-4, the jet streams (3' or 3) in Russian Pat. No. 432934 impinge on the fibers as the fibers are randomly arranged on the conveyor 2. In this random arrangement, some fibers inherently are oriented in the machine direction. Due to the random and intertwined arrangement, the streams would clearly impinge on at least some fibers of these machine direction fibers at their leading ends, on at least some fibers on the trailing ends, and on at least some fibers on their side. Due to the size and extent of the jets streams as shown in Figs. 1 and 2, some jet streams would inherently impinge on these portions of some fibers, since the fibers are in different positions under the jet stream. Thus, the limitations of claims 2-4 are inherently met by the process as disclosed in Russian Pat. No. 432934.

Regarding claim 5, Russian Pat. No. 432934 disclose that the angle between the jet streams 3,3' is 120-150 degrees, The patent does not disclose that the jets are at an angle in the range of 10-50 degrees with respect to the plane as recited in claim 5. Also, the range of 20-30 degrees as recited in claim 6 is not disclosed. One having routine skill in the art would recognize that the optimum angle of the jet stream (3 or 3') in the Russian patent can be determined through routine experimentation depending upon the type of fibers which are being treated, the speed at which the conveyor moves, the pressure of the jets streams and other related processing factors. It is within the routine skill in the art to determine such an angle as is optimal for the desired end

product, based upon these processing parameters. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the jet streams at an angle within the range of 10-50 or 20-30 degrees in Russian Pat. No. 432934 since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding claim 7, the Russian patent shows fluid jets arranged in two rows (3,3') such that curtains from the fluid jets are oriented at an angle with respect to the vertical and are offset from each other. The jets 3,3' clearly provide perturbation of fibers from their leading edges, trailing edges, and sides, due to the variety in position of the fibers forming the web, as discussed above. The Russian patent does not disclose that the offset angle as being between 5 and 30 degrees, however it is within the routine skill in the art to determine such a range based upon the speed at which the conveyor moves, the pressure of the jets streams and other related processing factors. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the jet streams 3,3' as offset at an angle between 5 and 30 degrees in Russian Pat. No. 432934 since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding claim 8, liquid is used as the fluid in the process of Russian Pat. No. 432934.

Regarding claim 11, it is unclear how the fiber web is formed upon the conveyor in the Russian patent, however the techniques disclosed in claim 11 are conventional in the art. Canadian Pat. No. 739,652 teaches that the initial fiber batt layer may be formed by carding (see, e.g., pg. 13, line 7). It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the fibrous batt upon the conveyor in Russian Pat. No. 432934 by means of carding, in order to produce a web which is easily treated by fluid jets, as is disclosed by Canadian Pat. No. 739,652.

4. Claims 1-4, 8-10, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al (US 6,571,441) in view of Dodson, Jr. et al (US 3,353,225).

Kobayashi et al disclose a method for changing the orientation of fibers in a nonwoven web including steps of providing a plurality of fluid jets offset at an appreciable angle from the perpendicular with respect to the web (see Fig. 1, showing the jets as non-perpendicular with respect to the longitudinal direction of the web). That is, with reference to Fig. 1, the longitudinal direction of the web along axis "Y" defines a parallel direction, while the X-axis shown in Fig. 1 defines a "perpendicular" direction of the web (also known as the transverse direction). The plurality of jets are offset from the perpendicular with respect to the web since they are angled with respect to the X-axis (the X-axis defining the "perpendicular"). A plurality of fluid streams are applied from the jets onto a surface of the nonwoven web, with the streams forming a

substantially coplanar curtain. The streams have sufficient pressure to move the fibers into a different orientation (col. 4, lines 12-32).

Although the document does not disclose that the step of applying fluid streams onto the web is performed "to increase the isotropy of the nonwoven web", such a recitation amounts to the reason for performing the claimed step and does not positively recite any additional manipulative steps which define over the steps of Kobayashi. The recitation that the step of applying fluid streams onto the web is performed "to increase the isotropy of the nonwoven web" merely amounts to the recitation of an intended characteristic of the resulting web and does not further define the actual manipulative steps of the claimed method. Moreover, it appears that the method of Kobayashi would inherently increase the isotropy of the resulting web with regard to at least some physical property, for example with regard to the uniformity of the web, since Kobayashi teaches that the angled jets produce a fabric with no impact traces or patterns.

Kobayashi does not disclose that the fibers are locked to maintain their different orientation, as recited in claim 1, however nonwoven fabrics are commonly treated after hydroentanglement or other hydrodynamic processes to lock the fibers in place. Dodson teaches that it is conventional to apply a binder to the fibers of the non-woven after treatment with fluid jets in order to impart strength and coherence to the structures (col. 1, lines 45-48). Application of such a binder is well known in the art and results in a locking of the fibers. It would have been obvious to one having ordinary skill in the art at the time the invention was made lock the fibers of the non-woven of Kobayashi in

place by applying a binder in order to impart strength and coherence to the web, as disclosed by Dodson.

Regarding claims 2-4, the jet streams in shown by Kobayashi impinge on the fibers as the fibers are randomly arranged on the support. In this random arrangement, some fibers inherently are oriented in the machine direction. Due to the random and intertwined arrangement, the streams would clearly impinge on at least some fibers of these machine direction fibers at their leading ends, on at least some fibers on the trailing ends, and on at least some fibers on their side. Due to the size and extent of the jets streams, some jet streams would inherently impinge on these portions of some fibers, since the fibers are in different positions under the jet stream (se Fig. 6). Thus, the limitations of claims 2-4 are inherently met by the process as disclosed by Kobayashi.

Regarding claims 8-10, Kobayashi does not disclose what type of fluid is used in the jets, however gas or liquid, and in particular water or air, are conventionally used for such hydroentanglement processes. Dodson discloses that the fluid used in the jets in his process may be water or air (col. 6, lines 9-15). Dodson teaches that gas and water are conventionally used in the art (col. 1, lines 31-45). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use water or air as the fluid in the jets of Kobayashi, since such fluids are conventionally used for hydroentangling jets as taught by Dodson.

Regarding claim 12, Kobayashi teaches that the method increases the fiber entanglement within the web. Such an increase in fiber entanglement would inherently

increase the opacity of the web, although Kobayashi does not specifically address web opacity. One having routine skill in the art would recognize that the jet pressure, the speed at which the conveyor moves, and other related processing factors may be adjusted in order to produce a web having desired characteristics, such as degree of entanglement or degree of opacity. It would require only ordinary skill in the art to determine through routine experimentation the optimum parameters to result in optimum opacity depending upon desired end use. . It would have been obvious to one having ordinary skill in the art at the time the invention was made to increase the opacity of the web by about 2.5%, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

5. Claims 1-4, 8-9, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al (US 6,571,441) in view of Kalwaites (US 3,873,255).

Kobayashi et al disclose a method for changing the orientation of fibers in a nonwoven web including steps of providing a plurality of fluid jets offset at an appreciable angle from the perpendicular with respect to the web (see Fig. 1, showing the jets as non-perpendicular with respect to the longitudinal direction of the web). That is, with reference to Fig. 1, the longitudinal direction of the web along axis "Y" defines a parallel direction, while the X-axis shown in Fig. 1 defines a "perpendicular" direction of the web (also known as the transverse direction). The plurality of jets are offset from the perpendicular with respect to the web since they are angled with respect to the X-

axis (the X-axis defining the "perpendicular"). A plurality of fluid streams are applied from the jets onto a surface of the nonwoven web, with the streams forming a substantially coplanar curtain. The streams have sufficient pressure to move the fibers into a different orientation (col. 4, lines 12-32).

Although the document does not disclose that the step of applying fluid streams onto the web is performed "to increase the isotropy of the nonwoven web", such a recitation amounts to the reason for performing the claimed step and does not positively recite any additional manipulative steps which define over the steps of Kobayashi. The recitation that the step of applying fluid streams onto the web is performed "to increase the isotropy of the nonwoven web" merely amounts to the recitation of an intended characteristic of the resulting web and does not further define the actual manipulative steps of the claimed method. Moreover, it appears that the method of Kobayashi would inherently increase the isotropy of the resulting web with regard to at least some physical property, for example with regard to the uniformity of the web, since Kobayashi teaches that the angled jets produce a fabric with no impact traces or patterns.

Kobayashi does not disclose that the fibers are locked to maintain their different orientation, as recited in claim 1, however nonwoven fabrics are commonly treated after hydroentanglement or other hydrodynamic processes to lock the fibers in place. Kalwaites teaches that it is conventional to bond or apply a binder to the fibers of the non-woven after treatment with fluid jets in order to strengthen the web (col. 6, lines 28-39; col. 4, lines 45-54). Application of such a binder is well known in the art and results in a locking of the fibers. It would have been obvious to one having ordinary skill in the

art at the time the invention was made lock the fibers of the non-woven of Kobayashi in place by applying a binder or by bonding in order to impart strength and coherence to the web, as disclosed by Kalwaites.

Regarding claims 2-4, the jet streams in shown by Kobayashi impinge on the fibers as the fibers are randomly arranged on the support. In this random arrangement, some fibers inherently are oriented in the machine direction. Due to the random and intertwined arrangement, the streams would clearly impinge on at least some fibers of these machine direction fibers at their leading ends, on at least some fibers on the trailing ends, and on at least some fibers on their side. Due to the size and extent of the jets streams, some jet streams would inherently impinge on these portions of some fibers, since the fibers are in different positions under the jet stream (se Fig. 6). Thus, the limitations of claims 2-4 are inherently met by the process as disclosed by Kobayashi.

Regarding claims 8-9, Kobayashi does not disclose what type of fluid is used in the jets, however gas or liquid, and in particular water, are conventionally used for such hydroentanglement processes. Kalwaites discloses that the fluid used in the jets in his process may be gas or liquid (col. 7, lines 11-13), in particular water (col. 7, line 12). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use water or gas as the fluid in the jets of Kobayashi, since such fluids are conventionally used for hydroentangling jets as taught by Kalwaites.

Regarding claim 11, it is unclear how the fiber web is formed upon the support in the method of Kobayashi, however the techniques disclosed in claim 11 are conventional in the art. Kalwaites teaches that the initial fiber batt layer may be formed by carding or air laying (col. 6, lines 50-53). It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the fibrous batt upon the support in Kobayashi by means of carding or air laying, in order to produce a web which is easily treated by fluid jets, as is disclosed by Kalwaites.

Regarding claim 12, Kobayashi teaches that the method increases the fiber entanglement within the web. Such an increase in fiber entanglement would inherently increase the opacity of the web, although Kobayashi does not specifically address web opacity. One having routine skill in the art would recognize that the jet pressure, the speed at which the conveyor moves, and other related processing factors may be adjusted in order to produce a web having desired characteristics, such as degree of entanglement or degree of opacity. It would require only ordinary skill in the art to determine through routine experimentation the optimum parameters to result in optimum opacity depending upon desired end use. . It would have been obvious to one having ordinary skill in the art at the time the invention was made to increase the opacity of the web by about 2.5%, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Allowable Subject Matter

6. Claim 13 is allowed.

Response to Arguments

7. Applicant's arguments filed 3/10/04 have been fully considered but they are not persuasive.

In response to Applicant's argument that Russian Patent 432,934 does not disclose improving the isotropy of the nonwoven web by making fibers less oriented, Applicant is arguing limitations which are not claimed. All of the steps of the claimed method are disclosed by the Russian document. Although the document does not disclose that the step of applying fluid streams onto the web is performed "to increase the isotropy of the nonwoven web", such a recitation amounts to the reason for performing the claimed step and does not positively recite any additional manipulative steps which define over the steps of the Russian document. The recitation that the step of applying fluid streams onto the web is performed "to increase the isotropy of the nonwoven web" merely amounts to the recitation of an intended characteristic of the resulting web and does not further define the actual manipulative steps of the claimed method. Moreover, the Russian document does disclose that the loosening of the fibers is increased and the permeation of the fiber layer by liquid is increased (see translation page 2, lines 3-4). Thus, it appears that the isotropy with regard to at least some physical characteristic(s) (such as loosening of the fibers or permeation) is inherently increased by the method of the Russian document.

With regard to Kobayashi et al, Applicant argues that the patent does not show fluid jets which are offset at an appreciable angle from the perpendicular with respect to the web. The Examiner disagrees, noting that in Fig. 1, the jets are non-perpendicular with respect to the longitudinal direction of the web. That is, with reference to Fig. 1, the longitudinal direction of the web along axis "Y" defines a parallel direction, while the X-axis shown in Fig. 1 defines a "perpendicular" direction with respect to the web (also known as the transverse direction). The plurality of jets are offset from the perpendicular with respect to the web since they are angled with respect to the X-axis (the X-axis defining the "perpendicular"). The claims do not define "the perpendicular" in such a way that the invention is defined over the angled jets of Kobayashi.

Further regarding Kobayashi, Applicant states that "In fact, the Examiner makes the same observation in the parenthetical statement on the first paragraph on page 7 of the office action". This parenthetical statement contained a typographical error, however, and "perpendicular" should have read as "non-perpendicular". The jets on member (manifold) 1 are clearly seen in Fig. 1 to *not* be perpendicular to the longitudinal direction of the web, i.e. they are clearly shown as "non-perpendicular".

8. Regarding Applicant's argument that Russian Pat. No. 432934 does not disclose that the fluid is water, this argument has been found persuasive in light of the translation of the Russian patent, and thus the rejection of claim 9 as unpatentable over Russian Patent No. 432934 in view of Canadian Pat. No. 739,652 has been withdrawn.

Conclusion

9. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy B. Vanatta whose telephone number is 703-308-2939. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Calvert can be reached on 703-305-1025. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Amy B. Vanatta
Primary Examiner
Art Unit 3765